



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/033,039      | 01/02/2002  | Ho-Yen Chang         | 50001.2103          | 8612             |

7590 12/02/2005

Arthur I. Navarro  
Godwin Gruber, P.C.  
Suite 655  
801 E. Campbell Rd.  
Richardson, TX 75081

EXAMINER

JUNG, MIN

ART UNIT PAPER NUMBER

2663

DATE MAILED: 12/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/033,039

Applicant(s)

CHANG ET AL.

Examiner

Min Jung

Art Unit

2663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 17 is objected to because of the following informalities: In claim 17, line 1, one of the "wherein the" should be deleted as it is a typo. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 16, 18, and 30-33 are rejected under 35 U.S.C. 102(e) as being anticipated by Malomsoky et al., US 6,304,639 (Malomsoky).

Malomsoky discloses a system and methods for controlling virtual paths within a network based on entropy rate function. Malomsoky teaches specifying traffic demands

Art Unit: 2663

for each virtual path, and balancing the loads on various links by equalizing blocking probabilities and determining the optimal allocation of network physical resources. See Abstract.

Regarding claims 16 and 18, Malomsoky specifically teaches a method of assigning path through an interconnection network consisting of a plurality of switching elements and a plurality of links coupling the switching elements (Fig. 1 shows a interconnection network including switching elements 21-26 and 31-34, and links 30, see col. 4, lines 35-58), the method comprising the steps of : mapping the interconnection network with a virtual circuit identifier, the virtual circuit identifier based on physical restrictions and traffic patterns of the network (Malomsoky teaches partitioning the physical network resources into logically defined resources. It is taught that, by this procedure, the task of analyzing and solving the traffic routing problem for each cell over an entire physical network can be reduced to the considerably simpler routing problem on each virtual network. See col. 2, lines 38-52. The partitioning of physical resources can also be necessitated by the existence of different traffic types, different classes of service or varying traffic demands. See col. 2, lines 53-55. Therefore, the mapping function reads on the partitioning procedure); and using the virtual circuit identifier to assign a path for data through the interconnection network from an input port to an output port (the assignment of virtual path in relation to virtual circuit connecting input port to an output port is taught at col. 6. lines 58-67, and Table 1 at col. 7).

Regarding claim 30, Malomsoky specifically teaches a system for routing data, comprising: a switching network including a plurality of switching elements and plurality of links coupled to the switching elements for providing a routing path for the data (Fig. 1); and a virtual circuit identification algorithm in communication with the switching network for providing an even distribution of data traffic through the switching network (col. 3, lines 29-39).

Regarding claim 31, Malomsoky teaches the switching elements forming a number of stages (the switching elements 21-26 forming one stage, and the switching elements 31-34 forming another stage, see Fig. 1).

Regarding claim 32, Malomsoky teaches logic for determining the physical restrictions of the switching network (Physical network resources partitioning is taught at col. 2, lines 38-46, and dimensioning and configuring is taught at col. 2, line 60 – col. 3, line 7. For performing such functions determination of physical restrictions is necessary. Therefore, determination of physical restrictions of the switching network is inherent in Malomsoky.

Regarding claim 33, Malomsoky teaches balancing data traffic through the plurality of links using traffic patterns of the switching network (col. 2, line 66 – col. 3, line 7, col. 3, lines 29-39).

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2663

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-15, 17, and 19-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Malomsoky.

Regarding claims 1 and 3, Malomsoky as described above teaches all the limitation, but fails to specifically teach the using of the logical representation and traffic patterns to setup virtual channel identifiers that determine paths so that data traffic is more evenly distributed through the interconnection network. However, even distribution of data traffic through the interconnection network per se is taught at col. 3, lines 33-39. The setting up of virtual channel identifiers that determine paths per se is also taught at col. 6, lines 58-67. The logical representation and traffic patterns are taught at col. 2, lines 38-59. What is not specifically taught is the usage of logical representation and traffic patterns in the setup of VCI so that even distribution of data traffic is achieved. Malomsoky teaches/reviews the VCI/VPI concept at col. 7, lines 10-38. Malomsoky's teaching has an objective of achieving even distribution traffic so that blocking is uniform. With all these teachings, it would have been obvious for one of ordinary skill in the art at the time of the invention to implement the virtual path controlling method of Malomsoky by employing the logical representation and the traffic pattern in the setup stage for VCI because most optimal results will be achieved when VCI is set up with the criteria specifying the logical representation and traffic pattern for the network.

Regarding claims 2, 4-8, 17, 19-23, Malomsoky fails to specifically teach that the physical restrictions are based on a speed of the switching element, a number of stages in the interconnection network, a number of switching elements in each stage, and a number of ports. Malomsoky, however, teaches configuration and physical network resources for translating into a logical representation. See col. 2, lines 38-46. Generally, physical network resources would include speed of the switching element, number of switching stages, a number of switching elements in each stage, and a number of ports, in addition to many other things. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to implement the Malomsoky's method by specifically utilizing the speed of the switching element, the number of stages in the switching network, a number of switching elements in each stage, and a number of ports as some of the network resources for applying physical restrictions for the logical representation.

Regarding claims 9-10, 24-25, Malomsoky fails to specifically teach that the logical representation of the architecture of the interconnection network is a bit representation and a permutation function of the architecture. Logical representation including bit representation and bit permutation is well known in the art, and therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to employ bit representation and permutation as a tool for the logical representation discussed in Malomsoky at col. 2, lines 38-52.

Regarding claim 11, Malomsoky fails to specifically teach that the traffic patterns of the interconnection network are balanced through switching elements of different

Art Unit: 2663

speeds. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to implement Malomsoky's teaching to balance the traffic pattern through switching elements of different speeds since Malomsoky teaches switching elements of different kinds (21-26 and 31-34) and teaches balancing the traffic pattern (col. 3, lines 33-39).

Regarding claims 12-15, 26-29, Malomsoky fails to specifically teach the VCI's identifying a source link identifier including a switching element identifier and an input port identifier, and a destination link identifier including a switching element identifier and an output port identifier. At col. 6, lines 58-67, it is taught that the VPI and VCI are valid for a specific link, and that physical port is assigned along with the VPI/VCI value. It is also shown in Table 1. As is well known in the art, a source link may be identified using a switching element connected to the link. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to utilize various identifiers and port numbers for identifying a virtual connection.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Lau patent, the Kumar patent, the Tanaka et al. patent, and the Chiussi et al. patent are cited for further references.




7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Min Jung whose telephone number is 571-272-3127.

The examiner can normally be reached on Monday through Friday 9:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJ  
November 30, 2005

  
Min Jung  
Primary Examiner